

ABSTRACT

This thesis is dedicated to university-level methods for solving systems of linear equations. The aim of the thesis is to explain the fundamentals of linear algebra to the reader using high school-level material and to present the differences between high school and university approaches, including their advantages and disadvantages. Another objective is to highlight the efficiency of various methods for different types of problems. At the beginning of each chapter, the necessary theoretical background is provided, assuming that the reader is familiar with the basic methods for solving systems of linear equations. The first chapter focuses on the Gaussian elimination method and the matrix representation of systems and is divided into three subchapters. The first subchapter explains Gaussian elimination using word problems. The second subchapter deals with real-life examples that require knowledge of systems of linear equations for their solution. The third subchapter focuses on examples without a unique solution. The second chapter addresses the disadvantages of matrix representation and is divided into two subchapters. The first subchapter discusses the method of back-substitution, which cannot be directly applied within matrix representation. The second subchapter presents an alternative approach for specific examples involving symmetric systems. The third chapter is devoted to special methods for solving regular systems and is divided into two subchapters. The first subchapter deals with Cramer's rule and the calculation of the determinant. The second subchapter focuses on solving systems using the inverse matrix and explains how to find the inverse matrix.